from FIG. 2A) for RI=2, CQI#1=1 and CQI#2=2, the eNodeB **20** can compute the resulting efficiency as 0.1523+0.2344=0.3867 which is close to a single-stream CQI of 3. In this example using the values of FIG. 2A, the eNodeB **20** would use an aggregation level of 2 rather than aggregation level 4 which the layer-specific CQIs individually would imply. Note that for this type of calculation to be valid all of the efficiencies of all the layers, and not just of the transport blocks that may be shared between several layers, should be taken into account.

[0036] In another example embodiment for the eNodeB **20** it takes the efficiency of the codeword with the lower supported CQI (which is the more conservative option) or the codeword with the larger supported CQI (which is the more aggressive option) into account, and multiplies that by the number of supported layers given by the rank indicator RI. Using an example of RI=3 and CQI#1=4 and CQI#2=6, the values at FIG. 2A yield a calculated efficiency of 3*0.6016=1.8048 which for the conservative option result in an aggregation level of two. For the aggressive link-adaptation option, the calculation would be 3*1.1756=3.5268 which then results in an aggregation level of one.

[0037] In an example embodiment, whenever the rank indicator is greater than one the eNodeB **20** may use the lowest aggregation level and potentially a higher order modulation. In another example embodiment the eNodeB **20** may use the CQI to eCSI mapping (FIGS. 2A-C) for the case of SU-MIMO CSI with rank indicator greater than one.

[0038] From the above examples and with reference to FIGS. 2A-C it is clear that one technical advantage of these teachings is that no specific eCSI needs to be provided by the UE **10**; instead the eNodeB re-interprets, with help from the UE **10**, how to use the CQI for PDSCH (which in the above examples the UE measures from a RS) to generate the eCSI for the ePDCCH. This is useful when frequency selective CSI is used because the frequency selective properties are similar for PDSCH and E-PDCCH, and so this saves a non-negligible amount of control signaling bits for transmission over the uplink. The above example solutions are also a straightforward enhancement as compared to having no additional CSI information at all to support the ePDCCH.

[0039] The logic flow diagram of FIG. 3A summarizes some of the non-limiting and exemplary embodiments of the invention from the perspective of the eNodeB **20** or certain components thereof if not performed by the entire eNodeB. Similarly FIG. 3B summarizes some of the non-limiting and exemplary embodiments of the invention from the perspective of the UE **10** or certain components thereof. These Figures may each be considered to illustrate the operation of a method, and a result of execution of a computer program stored in a computer readable memory, and a specific manner in which components of an electronic device are configured to cause that electronic device to operate, whether such an electronic device is the access node in full, the UE in full, or one or more components thereof such as a modem, chipset, or the like.

[0040] The various blocks shown at each of FIGS. 3A-B may also be considered as a plurality of coupled logic circuit elements constructed to carry out the associated function(s), or specific result of strings of computer program code or instructions stored in a memory. Such blocks and the functions they represent are non-limiting examples, and may be practiced in various components such as integrated circuit chips and modules, and that the exemplary embodiments of this invention may be realized in an apparatus that is embodied as an integrated circuit. The integrated circuit, or circuits, may comprise circuitry (as well as possibly firmware) for embodying at least one or more of a data processor or data processors, a digital signal processor or processors, baseband circuitry and radio frequency circuitry that are configurable so as to operate in accordance with the exemplary embodiments of this invention.

[0041] At block **302** the eNodeB **20** receives from a UE correspondence information relating channel states of a first set to channel states of a second set. In the example above the correspondence information was the UE's reporting of the relevant information from its mapping table (FIGS. 2A-C), and there are multiple ways as detailed above by non-limiting example for exactly how the UE can report this information. In those examples the first set of channel states of block **302** was for the UE's measured PDSCH and the second set of channel states was the UE's suggestions for the ePDCCH, but these teachings are not limited only to the above specific examples.

[0042] At block **304** the eNodeB **20** receives also from the UE an indication of at least one channel state of the first set. This is the one which the UE measured on the downlink from a RS sent by the eNodeB. At block **306** the eNodeB uses the received indication of block **304** and the received correspondence information of block **304** to determine a channel state from the second set.

[0043] The eNodeB **20** then at block **308** adapts a transmission on a downlink channel for the UE using the determined channel state from block **306**. In the above examples this downlink channel was a downlink control channel and the adapting the transmission may be done by adjusting any one or more of MCS, or aggregation level or size of the downlink control information (DCI, whose format gives the size of the PDCCH or ePDCCH) or in general the size of a payload, or precoding, or the PRBs the eNodeB uses for the ePDCCH, or other link adaptations known in the art.

[0044] As a further summary of the above examples in the context of FIG. 3A, recall that those examples indicated that the channel states of the first set were measured on reference signals sent by the eNodeB and refer to the channel state information of a physical downlink data channel such as the PDSCH sent by the eNodeB; the downlink control channel was an ePDCCH, and the indication of the channel state of the first set including an indication of an index of a CQI. In other embodiments there was a separate CQI index reported for each rank of the first set, and the channel state of the second set was determined as a single stream channel quality indication.

[0045] In another example the correspondence information comprises at least channel state transitions of a mapping between different channel states of the first set and different channel states of the second set. In a more specific example, for each rank of the first channel there is received a separate indication of the channel state of the first channel. The channel state of the second channel is determined as a relative single stream channel quality indicator; or the separate channel quality indication comprises a channel quality indication associated with a parameter of a codeword and the channel state of the second channel is determined by combining the parameters of the codewords associated with the separate channel quality indications of a number of supported layers given by the rank.